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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/035,906	12/31/2001	Steven M. Penn	TI-32220	2192
23494	7590	12/17/2004	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED			CURTIS, CRAIG	
P O BOX 655474, M/S 3999			ART UNIT	
DALLAS, TX 75265			PAPER NUMBER	
			2872	

DATE MAILED: 12/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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## Office Action Summary

Application No.

10/035,906

Applicant(s)

PENN, STEVEN M.

Examiner

Craig Curtis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-9 is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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## **DETAILED ACTION**

### ***Disposition of the Instant Application***

- This Office Action is responsive to Applicant's Amendment filed on 7 October 2004, which has been made of record in the file.
- By this amendment, Applicant has amended claims 1-3, 5-13, 15-18, 20, and 22.
- Claims 1-22 currently are pending in the instant application.

### ***Claim Rejections - 35 USC 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. **Claims 1-3, 5, 20, 22, are rejected under 35 U.S.C. 103(a) as being unpatentable over Fritz (5,327,413).**

**Fritz discloses the invention as claimed--[a]n optical component (see "optical component" annotation in Fig. 4) comprising:**

a) a reflecting element (see "reflecting element" annotation in Fig. 4) having at least one substantially planar surface (viz., 150): see col. 5, ll. 21-54; and

b) a lens element (see "lens element" annotation in Fig. 4) having at least one substantially planar surface (136), the lens element being positioned relative to the reflecting

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element whereby the at least one substantially planar surface of the lens element is adjacent and substantially parallel to the at least one substantially planar surface of the reflecting element (see Fig. 4), the lens element also having a curved surface (see curved lower surface near, inter alia, reference numeral 140 in Fig. 4) for focusing light passing through it. See 140, 142, and 144 in Fig. 4.

In addition, it is noted that the limitation "...the optical component is formed of a single optical piece having a slit formed therein to separate at least a portion of the substantially planar surface of the reflecting element from at least a portion of the substantially planar surface of the lens element..." recited in lines 8-10 of claim 2 (and, through their dependency, also in claims 5, 20, and 21) is considered to be a "product by process" limitation. "Product by process" limitations recited in a claim or claims drawn to a structure (or product or article, etc.), regardless of how such structure(s) is/are made, are directed to the product per se. See *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985), which makes clear that it is the patentability of the final product per se that must be determined in claims having "product by process" limitations and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. See also *MPEP § 2113, Note 8*, which states that Applicant has the burden of proof in such cases, as the above-recited case law makes clear—**EXCEPT FOR** an explicit teaching wherein said component is a monolithic optical element comprising a first element portion and a lens element portion separated by a slit formed in said monolithic optical

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element. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the invention of Fritz such that said optical component be monolithic, for at least the purpose of achieving some measure of alignment stability, because it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 15 U.S. 164 (1893).

Fritz further discloses wherein said reflecting element is formed of a first optical piece and wherein the lens element is formed of a second optical piece, and wherein the optical component is formed by affixing the first optical piece to the second optical piece with an air gap between them. See Fig. 4 and col. 5, ll. 21-54.

Fritz further discloses wherein said reflecting element also has a lens surface. See Fig. 4.

Please see col. 5, ll. 28-30 & air gap 137 in Fig. 4.

**3. Claims 4 & 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fritz (5,327,413) in view of Poradish et al. (5,905,545).**

Fritz discloses the claimed invention as set forth above **EXCEPT FOR** explicit teachings of the following additionally recited limitations: wherein said first and second optical pieces are affixed to each other with spacers positioned between their respective substantially planar surfaces. Fritz does however explicitly disclose wherein two optical elements (e.g., 125 & 132 in Fig. 4) are both affixed with an air gap (see col. 5, ll. 28-31).

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Poradish et al., on the other hand, disclose wherein an optical component (viz., TIR prism 28a in Fig. 2) is formed by affixing a first optical piece to a second optical piece such that both spacers (27a & 27b in Fig. 2a) and an air gap are between them. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the invention of Fritz such that said optical component be formed by affixing said reflecting element and said lens element with an air gap as well as spacers between them, as motivated by Poradish et al., for at least ensuring that, when the critical angle is satisfied, total internal reflection take place within said reflecting element as depicted in Fig. 2K of Winston et al. but not made explicit in the text associated therewith in the reference.

**4. Claims 10-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poradish et al. (5,905,545).**

With respect to claims 10-12, Poradish et al. disclose the invention as claimed--a reflective substrate (part of DMD SLM 30a) mounted in a semiconductor package having an opening through which light beams may pass (inherent); a reflecting element (portion of TIR prism 28a nearest SLM 30a); a lens element having at least one substantially planar surface (see surface beneath uppermost curved portion of TIR prism 28a's lens element in Fig. 2), the lens element being positioned relative to said reflecting element whereby the at least one substantially planar surface of the lens element is adjacent and substantially parallel to said at least one substantially planar surface of said reflecting element (see Fig. 2), the lens element also having a curved surface for focusing light passing through it (Id.)--**EXCEPT FOR** an explicit teaching

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wherein, with respect to claim 10, said reflective element is mounted to said opening of said semiconductor package; wherein, with respect to claim 11, a clear window be mounted in the opening and wherein said reflecting element is affixed to the optical component above the clear window; and wherein, with respect to claim 12, said reflecting element is mounted directly into said opening.

It would have been obvious to one having ordinary skill in the art at the time the invention was made, however, to have mounted (1) said reflective element to said opening of said semiconductor package, (2) a clear window in said opening, wherein said reflecting element be affixed to said optical component above said clear window, and (3) said reflecting element be mounted directly into said opening, since it has been held that forming in one piece an article that has formerly been formed in two or more pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893).

**With respect to method claims 13-19**, the structural-element teachings by Poradish et al. implicitly encompass the method step teachings recited in these claims. More specifically with respect to claims 17 and 18, said lens element of said single integrated optical component can, depending on the relative placement of projection lenses 32a & 32b, be deemed as being positioned either/both telecentrically or non-telecentrically relative to said reflection path from said spatial light modulator.

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### ***Allowable Subject Matter***

5. Claims 6-9 are allowed.

### ***Reasons for Allowance***

6. The following is the Examiner's statement of reasons for allowance:

The claims would be allowable over the prior art for at least the reason that the prior art fails to teach or to reasonably suggest *wherein said reflective element is, inter alia, circularly symmetrical, and having a conical indentation within the upper portion that serves as a TIR element*, as set forth in the claimed combination.

7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Response to Arguments***

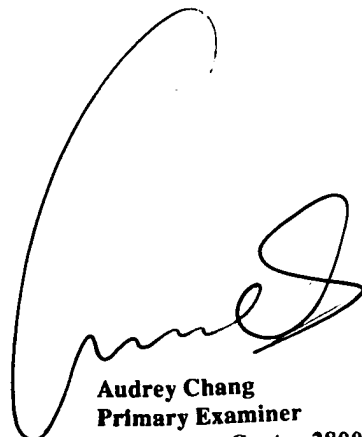
8. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.



### ***Contact Information***

10. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Craig Curtis, whose telephone number is (571) 272-2311. The centralized facsimile phone number for the USPTO is (703) 872-9306.

Any inquiry of a general nature regarding the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.



**Audrey Chang  
Primary Examiner  
Technology Center 2800**

*C.H.C.*  
**Craig H. Curtis**  
Group Art Unit 2872  
9 December 2004